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09/939,432	08/24/2001	Theodore M. Taylor	108298535US	2793

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PERKINS COIE LLP  
PATENT-SEA  
P.O. BOX 1247  
SEATTLE, WA 98111-1247

EXAMINER

OJINI, EZIAMARA ANTHONY

ART UNIT PAPER NUMBER

3723

DATE MAILED: 09/08/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/939,432

Applicant(s)

TAYLOR, THEODORE M.

Examiner

Anthony Ojini

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 24 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 48-66 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 48-66 is/are rejected.
- 7) ☒ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

Applicant's cancellation of claims 1-47,67-101 in Paper No. 4 is acknowledged.

#### ***Information Disclosure Statement***

The information disclosure statement filed 12/23/02 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

#### ***Drawings***

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 48-66 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 48,53,55,57,59, line 4, it is unclear which carrier assembly applicant is referring to because in figures 2 and 4, two carrier assemblies (end-effector carrier assembly and workpiece carrier assembly) are shown.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 48, 53 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sandhu et al. (5,975,994) in view of Myoung et al. (6,439,986 B1) and Ma et al. (6,500,054 B1).

**With respect to claims 48, 53, 55, Sandhu et al.** disclose an apparatus (100) for conditioning surface of polishing pad (140), comprising a platen (120) for supporting the polishing pad (140); a conditioning carrier assembly having a holder (164) positioned over the polishing pad (see fig. 2); and conditioning element (170) that defines a front side and carried by a holder (164), the conditioner having a conditioning surface configured to engage the contact surface of the polishing pad (140).

Sandhu et al. fail to disclose a plurality of microstructures on the conditioning surface, the microstructures being arranged in a pattern corresponding to a desired pattern of microfeatures on the contact surface of the processing pad, and the microstructures

being raised elements projecting from the conditioning surface and/or depressions in the conditioning surface.

**Myoung et al.** disclose a conditioner for polishing pad having a plurality of microstructures on the conditioning surface, the microstructures being arranged in a pattern corresponding to a desired pattern of microfeatures on the contact surface of the processing pad, and the microstructures being raised elements projecting from the conditioning surface except depressions in the conditioning surface (see abstract and figures, 2C, 7A).

**Ma et al.** disclose polishing pad conditioner having depressions in on conditioning surface (see fig. 7).

It would have been obvious to one having ordinary skill in the art at the time the invention was to provide apparatus of Sandhu et al. with a conditioner for polishing pad having a plurality of microstructures on the conditioning surface, the microstructures being arranged in a pattern corresponding to a desired pattern of microfeatures on the contact surface of the processing pad, and the microstructures being raised elements projecting from the conditioning surface and/or depressions in the conditioning surface in view of **Myoung et al.** and **Ma et al.** so as to effectively condition the surface of the polishing pad.

Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sandhu et al. in view of Myoung et al. and Ma et al. as applied to claim 48 above, and further in view of Skrovan (6,361,413 B1).

**With respect to claim 49**, Sandhu et al. is discussed in above claims except a conditioning element that comprises a plate having a backside with a joint for connecting the plate to a holder; and a microstructures comprising raised features spaced apart from one another in the pattern.

Skrovan discloses conditioner (160) comprising a plate (162) having a backside with a joint for connecting the plate to a holder (172).

It would have been obvious to one having ordinary skill in the art at the time the invention was to provide apparatus of Sandhu et al. with a conditioning element comprising a plate having a backside with a joint for connecting the plate to a holder in view of Skrovan so as so as to bond a bonding medium and plurality of conditioning particles such as abrasive particles onto the surface of the plate.

Claims 51,52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sandhu et al. (5,975,994)) in view of Myoung et al. (6,439,986 B1) as applied to claim 48 above, and further in view of Shendon et al. (5,775,983).

**With respect to claim 51**, Sandhu et al. fail to disclose wherein the conditioner comprises a cylindrical roller and the conditioning surface is cylindrical.

Shendon et al. disclose conditioning apparatus having a cylindrical roller (102) and wherein the conditioning surface is cylindrical (see fig. 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was to provide apparatus of Sandhu et al. with a conditioner wherein the conditioner comprises a cylindrical roller and the conditioning surface is cylindrical in

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view of Shendon et al. so as to ensure a complementary pattern of indentations into the surface across of the polishing pad.

**With respect to claim 52**, Sandhu et al. fail to disclose wherein the conditioner comprises a conical roller and the conditioning surface is conical.

Shendon et al. disclose conditioning apparatus having a conical roller (716) and wherein the conditioning surface is conical (see fig. 7).

It would have been obvious to one having ordinary skill in the art at the time the invention was to provide apparatus of Sandhu et al. with a conditioner wherein the conditioner comprises a conical roller and the conditioning surface is conical in view of Shendon et al. so as to condition the surface of the pad and move the conditioner relative to the pad with no differential slippage across the pad surface.

Claim 57 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sandhu et al. (5,975,994) in view of Myoung et al. (6,439,986 B1), Shendon et al. (5,775,983) and Ma et al. (6,500,054 B1).

**With respect to claim 57**, Sandhu et al. disclose a apparatus (100) for conditioning surface of polishing pad (140), comprising a platen (120) for supporting the polishing pad (140); a conditioning carrier assembly having a holder (164) positioned over the polishing pad (see fig. 2); and conditioner platen (170) having a backside with a joint for connecting the platen to a holder (164), the conditioner having a conditioning surface configured to engage the contact surface of the polishing pad (140).

Sandhu et al. fail to disclose a plurality of microstructures on the conditioning surface, the microstructures being arranged in a pattern corresponding to a desired pattern of

microfeatures on the contact surface of the processing pad, and the microstructures being raised elements projecting from the conditioning surface and/or depressions in the conditioning surface. Sandhu et al. also fail to disclose wherein the conditioner comprises a conical roller and the conditioning surface is conical.

**Myoung et al.** disclose a conditioner for polishing pad having a plurality of microstructures on the conditioning surface, the microstructures being arranged in a pattern corresponding to a desired pattern of microfeatures on the contact surface of the processing pad, and the microstructures being raised elements projecting from the conditioning surface except depressions in the conditioning surface (see abstract and figures, 2C, 7A).

**Shendon et al.** disclose conditioning apparatus having a conical roller (716) and wherein the conditioning surface is conical (see fig. 7).

**Ma et al.** disclose polishing pad conditioner having depressions in on conditioning surface (see fig. 7).

It would have been obvious to one having ordinary skill in the art at the time the invention was to provide apparatus of Sandhu et al. with a conditioner for polishing pad having a plurality of microstructures on the conditioning surface, the microstructures being arranged in a pattern corresponding to a desired pattern of microfeatures on the contact surface of the processing pad, and the microstructures being raised elements projecting from the conditioning surface and/or depressions in the conditioning surface in view of **Myoung et al.** and **Ma et al.** so as to effectively condition the surface of the polishing pad.



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It would have been obvious to one having ordinary skill in the art at the time the invention was to provide apparatus of Sandhu et al. with a conditioner wherein the conditioner comprises a conical roller and the conditioning surface is conical in view of Shendon et al. so as to condition the surface of the pad and move the conditioner relative to the pad with no differential slippage across the pad surface.

***Allowable Subject Matter***

Claims 50,54,56,58 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 59-66 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

The following is a statement of reasons for the indication of allowable subject matter: the specific limitation "a heat source (180) coupled to the end-effector (162) to provide heat to the conditioning" in the combination as claimed in claim 59, is not anticipated or made obvious by the prior art in the examiner's opinion. For example Sandhu et al. (5,975,994) disclose a apparatus (100) for conditioning surface of polishing pad (140), comprising a platen (120) for supporting the polishing pad (140); a conditioning carrier assembly having a holder (164) positioned over the polishing pad (see fig. 2); and conditioning element (170) that defines a front side and carried by a holder (164), the conditioner having a conditioning surface configured to engage the contact surface of the polishing pad (140). However, the art of record considered as a

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whole, alone or in combination, fails to provide or suggest, "a heater carried by the end-effector to provide heat to the conditioning".

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Jairat, Nishio, Muroyama et al., Brunelli,

Bullard et al., Moore, Peng et al., Southwick disclose conditioning apparatus respectively.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Ojini whose telephone number is 703 305 3768. The examiner can normally be reached on 7.30 to 5.00 Tuesday-Friday with every other Monday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Hail can be reached on 703 308 2687. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 1148.



AO  
August 28, 2003